M810C Service Manual

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1 Product Characteristic

1.1 Overview

M810C is dual-frequency mobile main-board. It supports 1.77(128*160) and 2.0(176*220) LCD module, digital camera and MMS module, 64-chord ring, MP3, USB and many kinds of useful functions - multi-language input, phone note, ck/alarm clock, calculator, games, FM radio, Bluetooth.

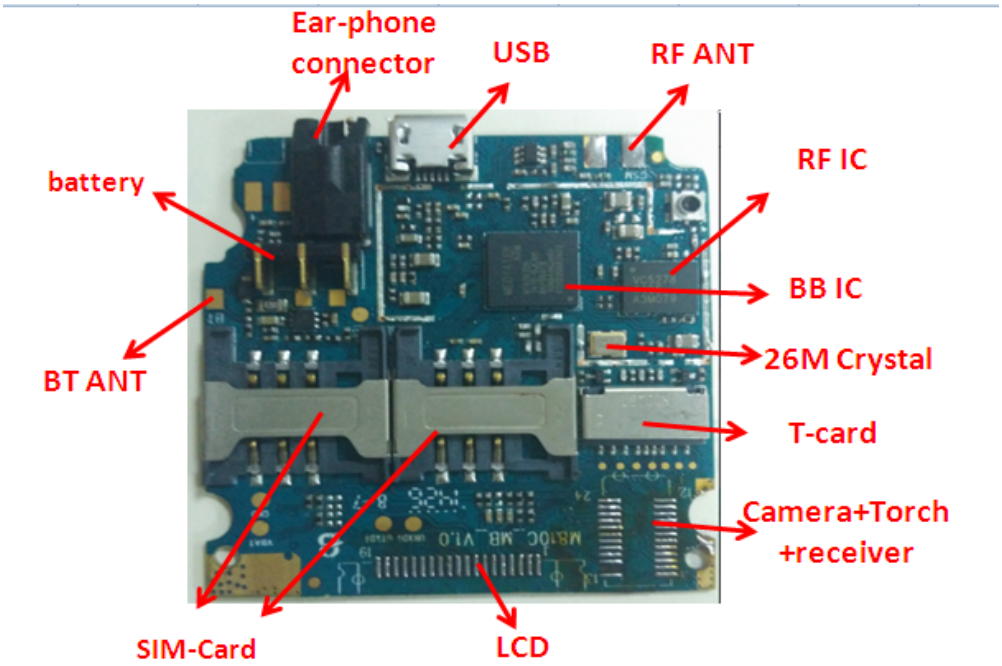
1.2 Functions

M810C main-board system overview:

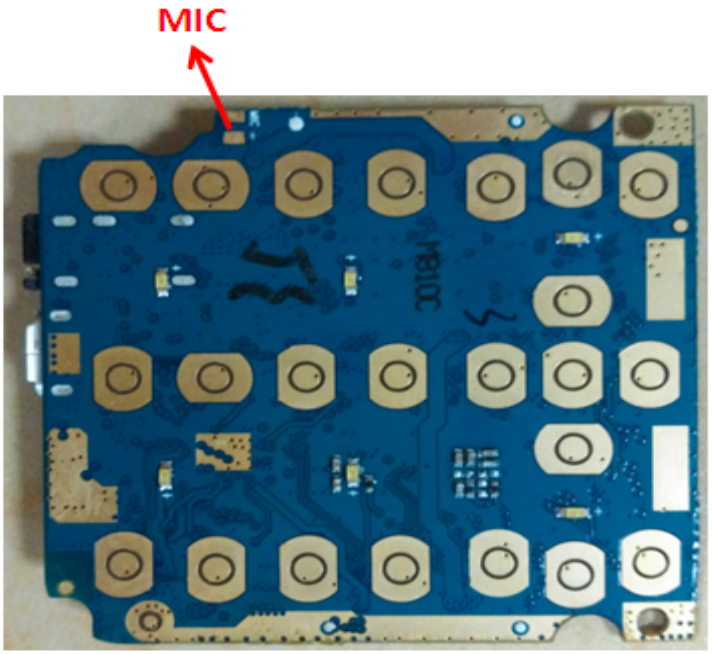
- 97mm*36mm
- GSM900/DCS1800 dual-frequency mode;
- Supports 2.0/2.4 LCD module
- Supports digital camera;
- Supports MP3 music;
- Supports MPEG4 format movies;
- Extensible Memory: T_FLASH card;
- Supports longtime sound record;
- Earphone connector;
- Electric torch;
- Supports MMS;
- 64-chord ring;
- Short message;
- Many games integration;
- Rings, volume, desktop individuation setup.

1.4 Main-board placement

M810C_MB_Bottom



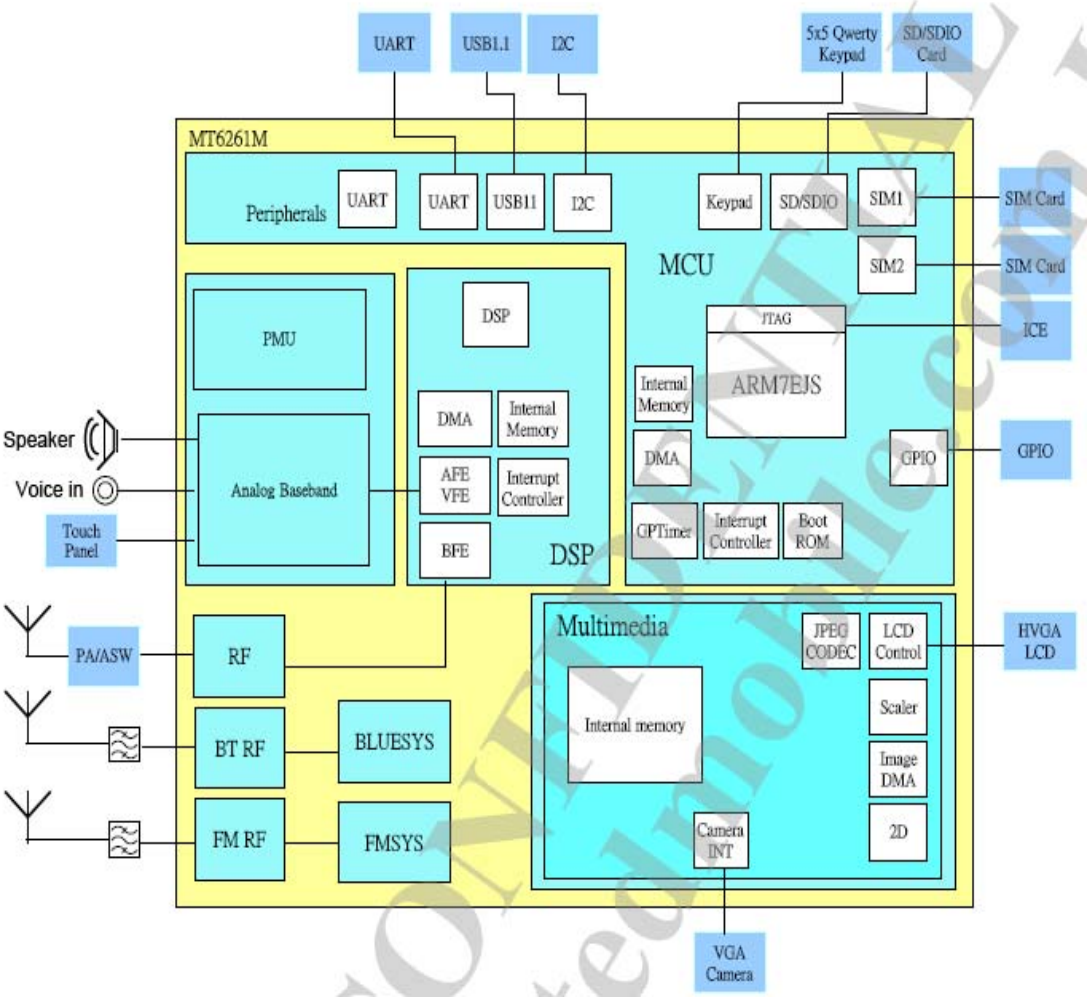
M810C_MB_TOP



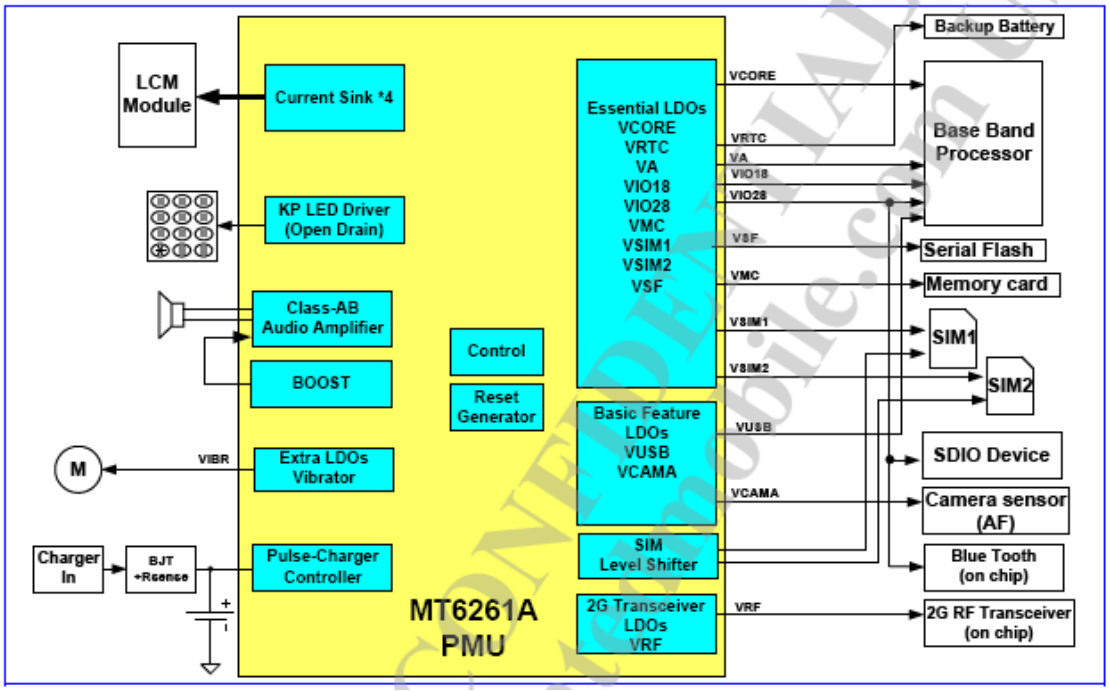
2 Circuit

2.1 System Overview

MT6261M is a feature-rich and extremely powerful single-chip solution for high-end GSM/GPRS capability. Based on the 32-bit ARM7EJ-STM RISC processor, MT6261M's superb processing power, along with high bandwidth architecture and dedicated hardware support, provides a platform for high-performance GPRS Class 12 MODEM application and leading-edge multimedia applications.



The power management unit (PMU) manages the power supply of the entire chip, such as baseband, processor, memory, SIM cards, camera, vibrator, etc. The digital part of PMU is integrated into the analog part (see the figure below). PMU includes the following analog functions for signal processing:

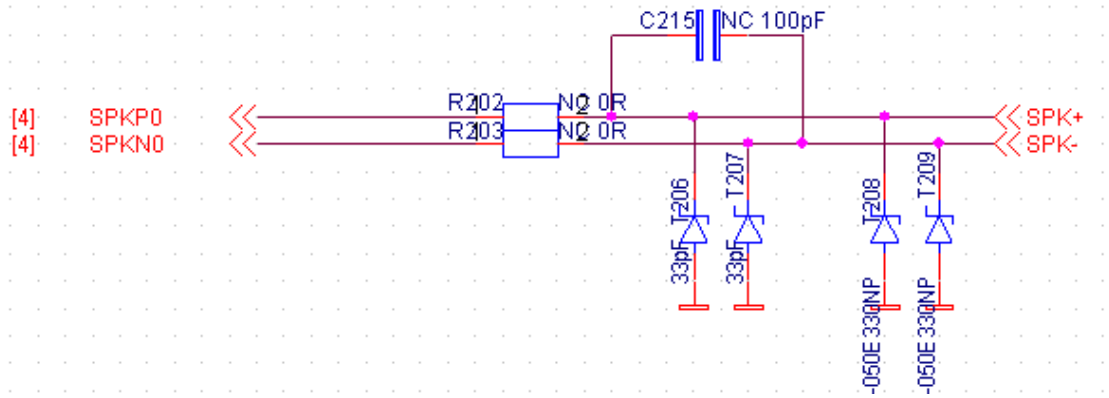


There are three types of LDOs in PMU of MT6261A PMU. The analog LDO is optimized for low-frequency ripple rejection in order to reject the ripples coming from the burst of RF power amplifier. The digital IO LDO is a linear regulator optimized for very low quiescent current. The single-step RTC LDO is a linear regulator that can charge up a capacitor-type backup coin cell, which also supplies the RTC module even at the absence of the main battery. The single-step LDO features reverse current protection and is optimized for ultra-low quiescent current while sustaining the RTC function as long as possible

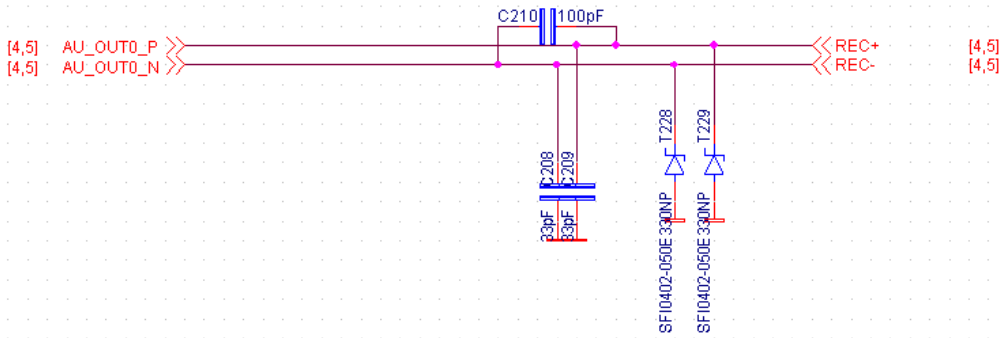
Type	LDO name	Vout (Volt)	Imax(mA)	Description
ALDO	VRF	2.8	150	RF chip and 26MHz reference clock
ALDO	VA	2.8	150	Analog baseband
ALDO	VCAMA	2.8	70	Camera sensor
DLDO	VIO28	2.8	100	Digital IO and Blue tooth
DLDO	VSIM1	1.8/3.0	30	SIM card
DLDO	VSIM2	1.8/3.0	30	SIM card
DLDO	VUSB	3.3	50	USB
DLDO	VIO18	1.8	100	Digital IO
DLDO	VCORE	0.75~1.35	150	Digital baseband
DLDO	VIBR	1.8/2.8/3.0	100	Vibrator
DLDO	VMC	1.8/2.8/3.0/3.3	100	Memory card
DLDO	VSF	1.86/2.8/3.0/3.3	50	Serial flash
RTCLDO	VRTC	2.8/3.3	2	Real-time clock

2.2 AUDIO circuit

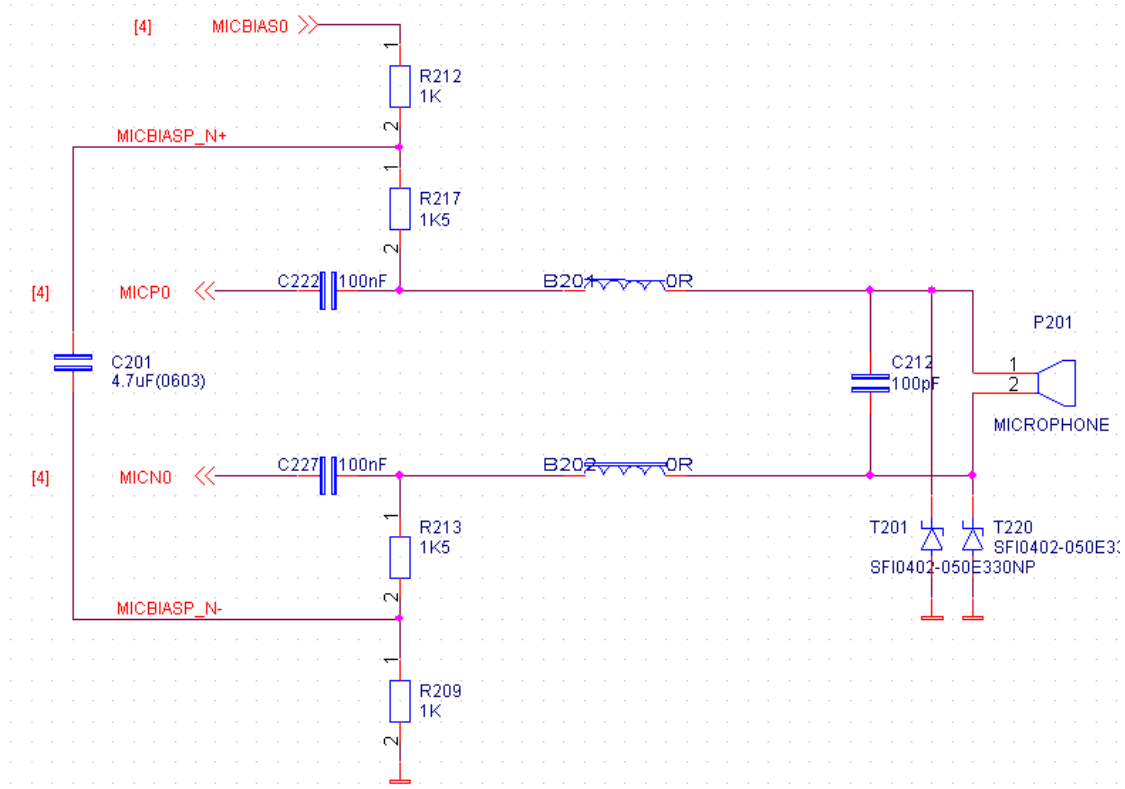
Speaker:



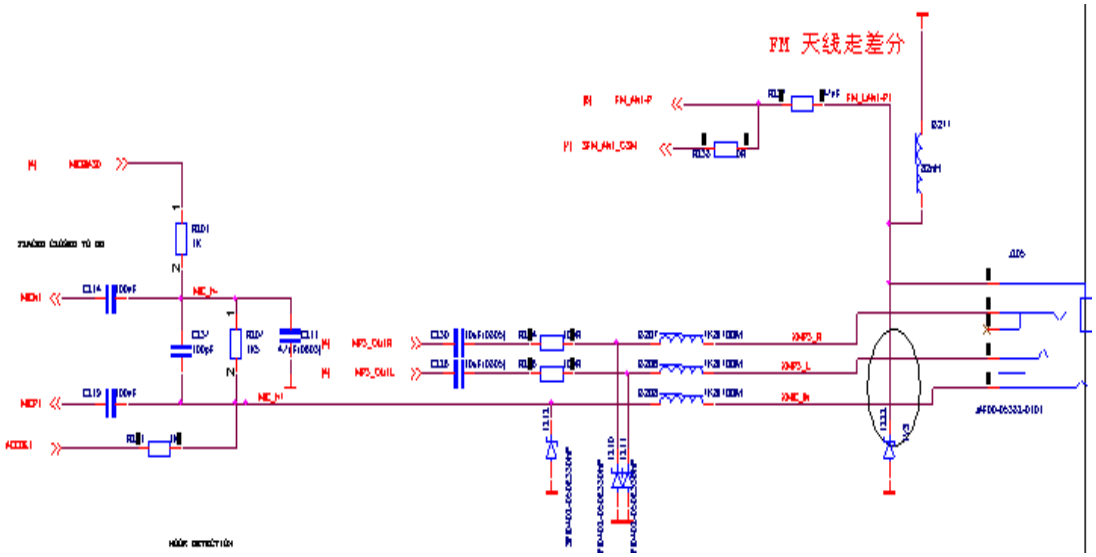
Receiver:



MIC:

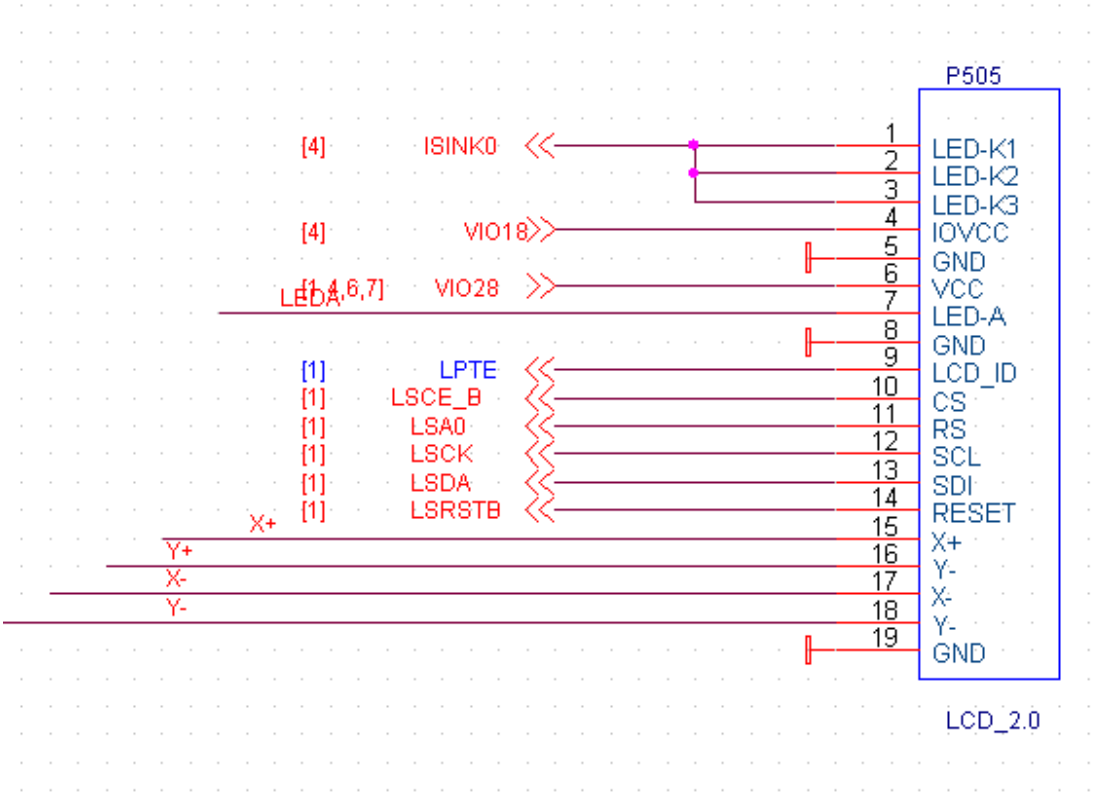


Earphone：



2.3 LCD module

- TFT mode: 1.77QQVGA/2.0 QICF
- Resolution: 128*160/176*220 Dot
- Back light mode: Write LED



2.4 Battery and charger

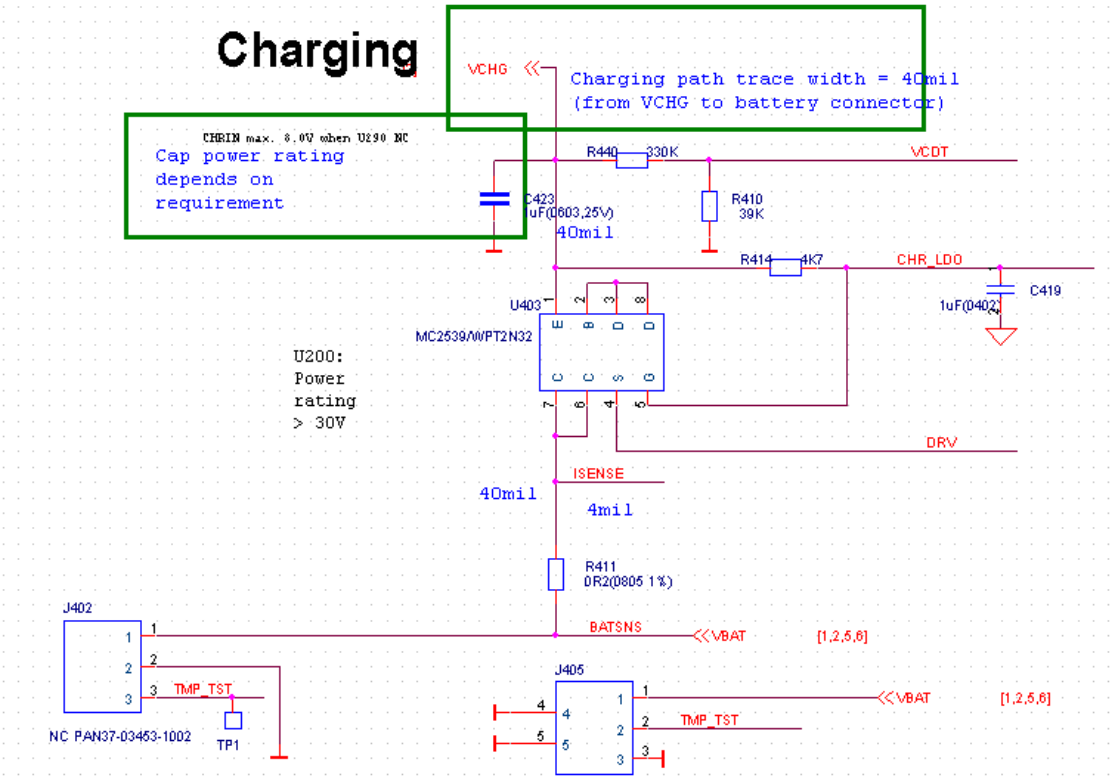
(1) Battery

The Li-on battery is advised, 3pin.

Dimension and capacity is decided by mechanism solution.

(2) Charge process

The switch charger is recommended for S33 with USB cable can be used too. The charge process is optimized for Li-on battery specially that include pre-charge, constant current charge and constant voltage mode. It can protect battery and extend usage life of battery.

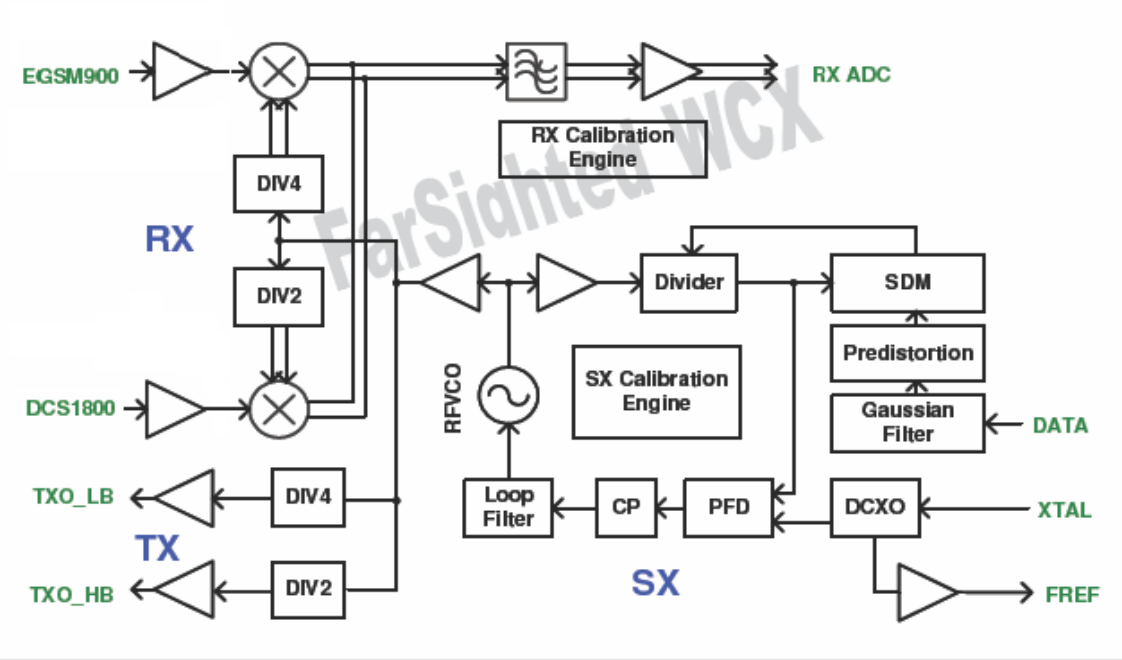


2.5 RF module

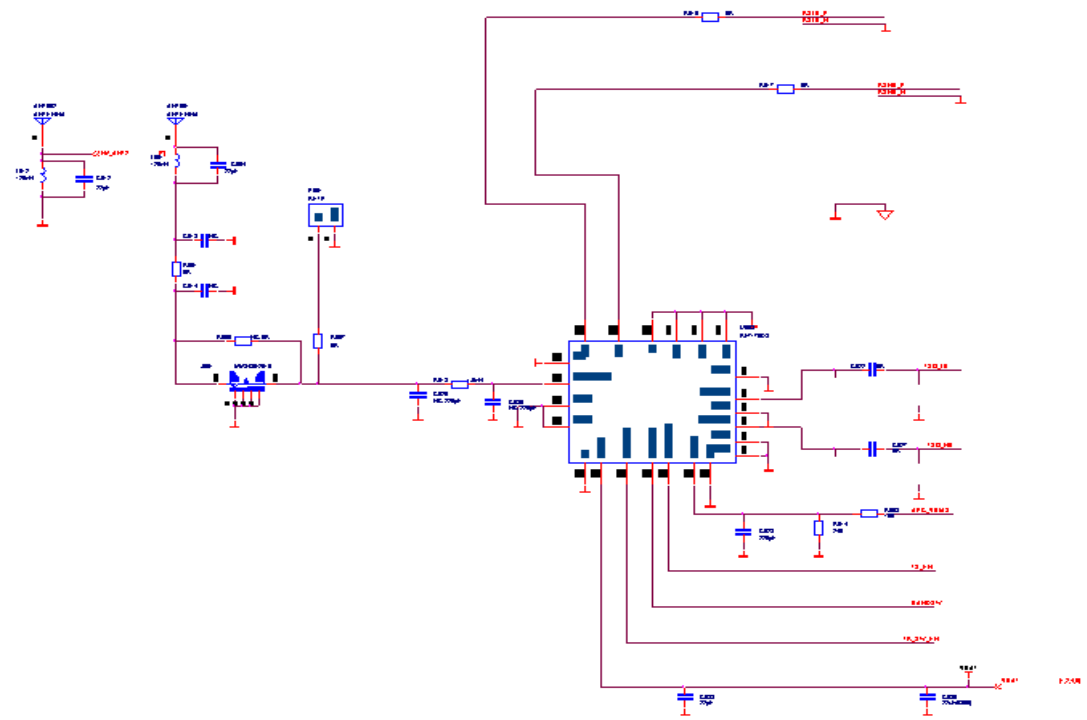
Transceiver (RF7170DS)

The RF7170D is a dual-band (EGSM900/DCS1800) GSM/GPRS Class-12-compliant transmit module with two symmetrical receive ports. This transmit module builds upon RFMD's leading power amplifier with PowerStar® integrated power control technology, pEMT switch technology, and integrated transmit filtering for best-in-class harmonic performance. The results are high performance, reduced solution size, and ease of implementation. The device is designed for use as the final portion of the transmitter section in an EGSM900/DCS1800 handset and eliminates the need for a PA-to-antenna switch module matching network. The device provides 50 matched input and output ports requiring no external matching components.

RF Block：

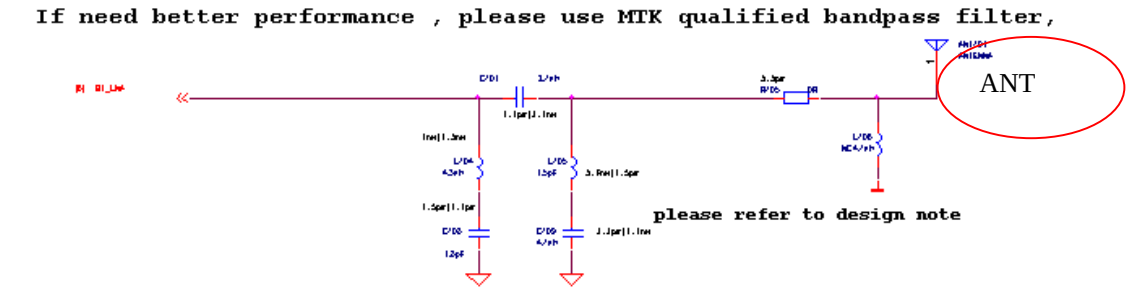


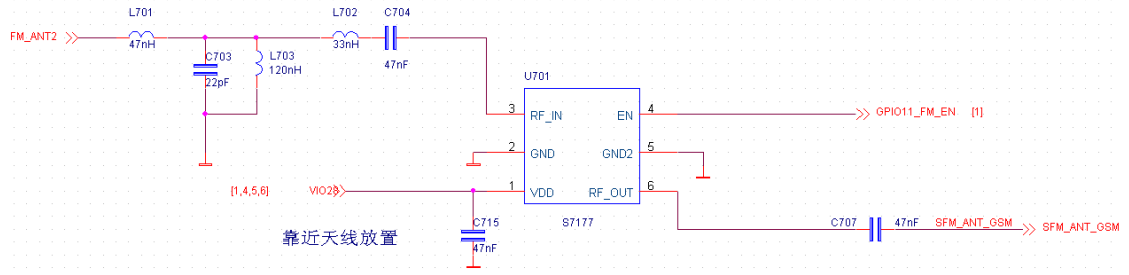
M810C RF circuit：

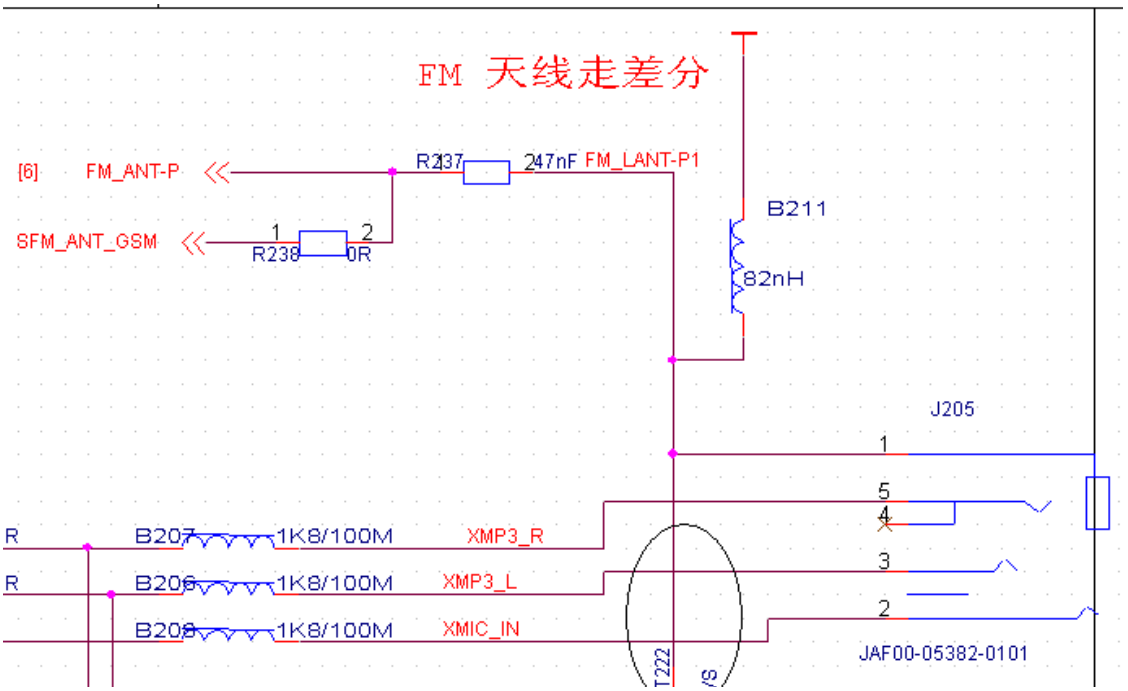


2.6 Bluetooth and FM

M810C Bluetooth and FM circuit：





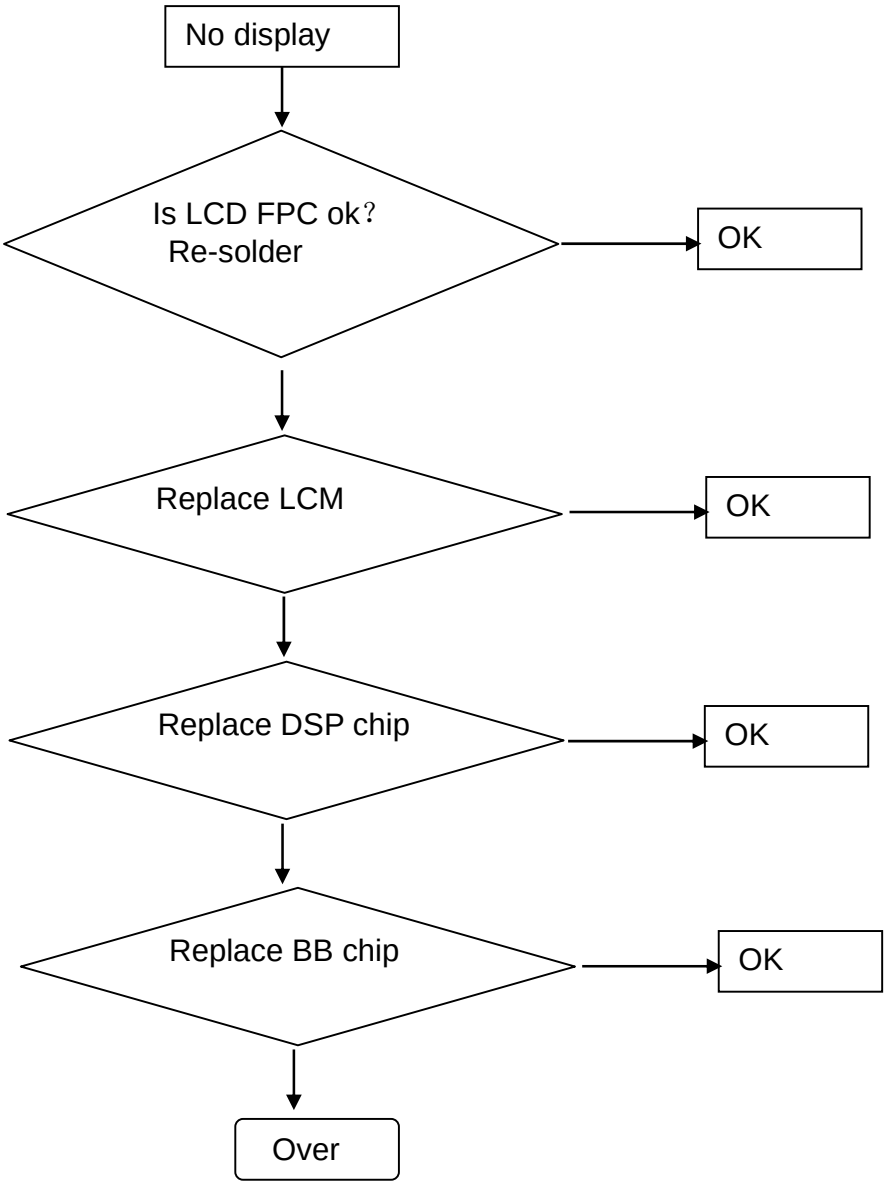


3 troubleshooting

3.1 LCD module

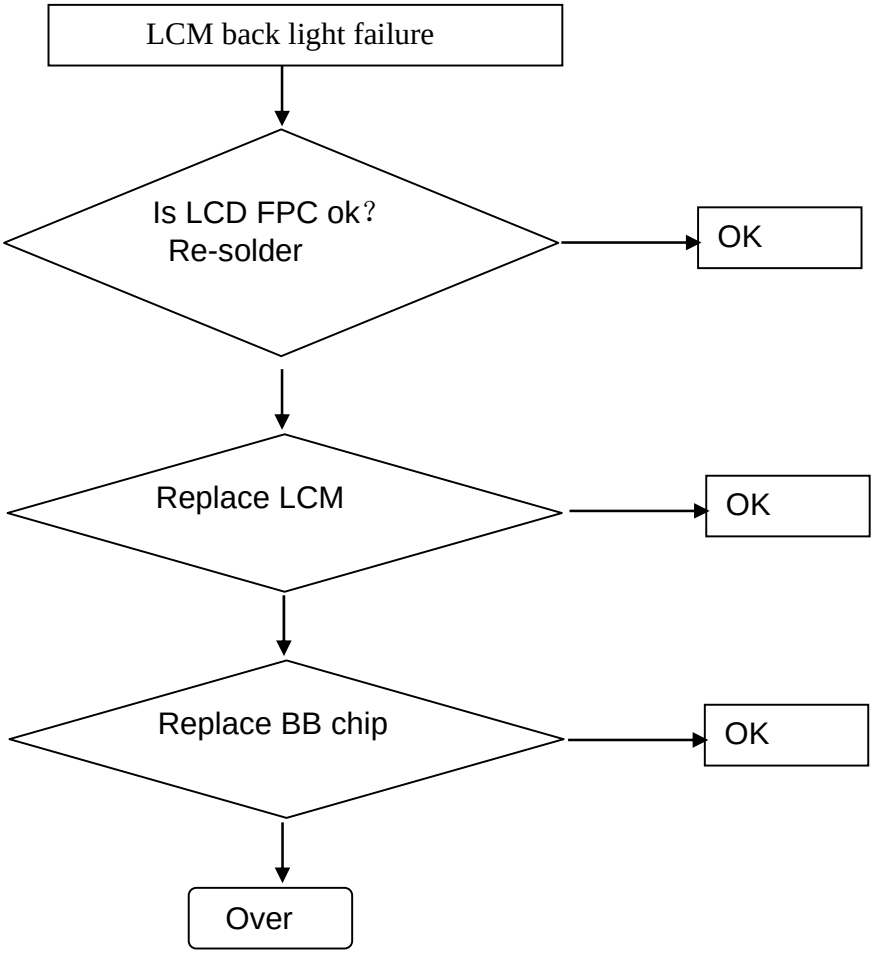
3.1.1 No display

- Detail: no display
- Analysis: LCM FPC is broken; LCM is broken
- Repair:



3.1.2 LCM back light failure

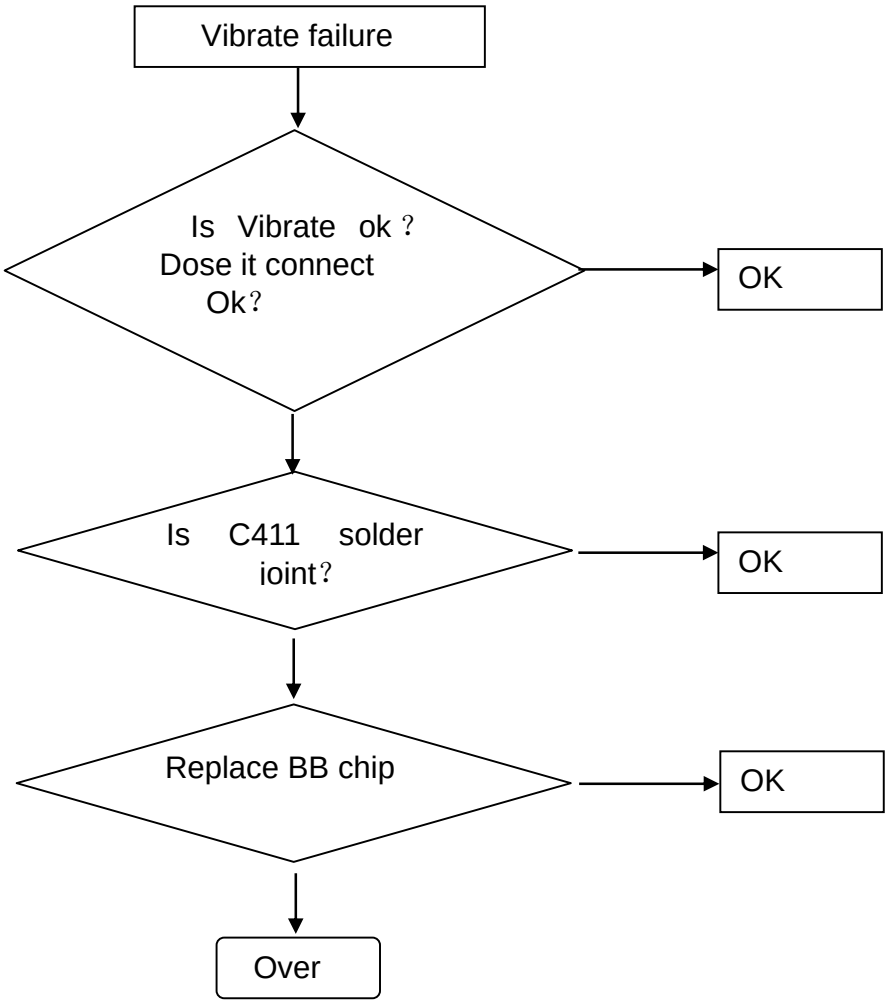
- Detail: LCM back light failure
- Repair:



3.2 Ring and vibrator

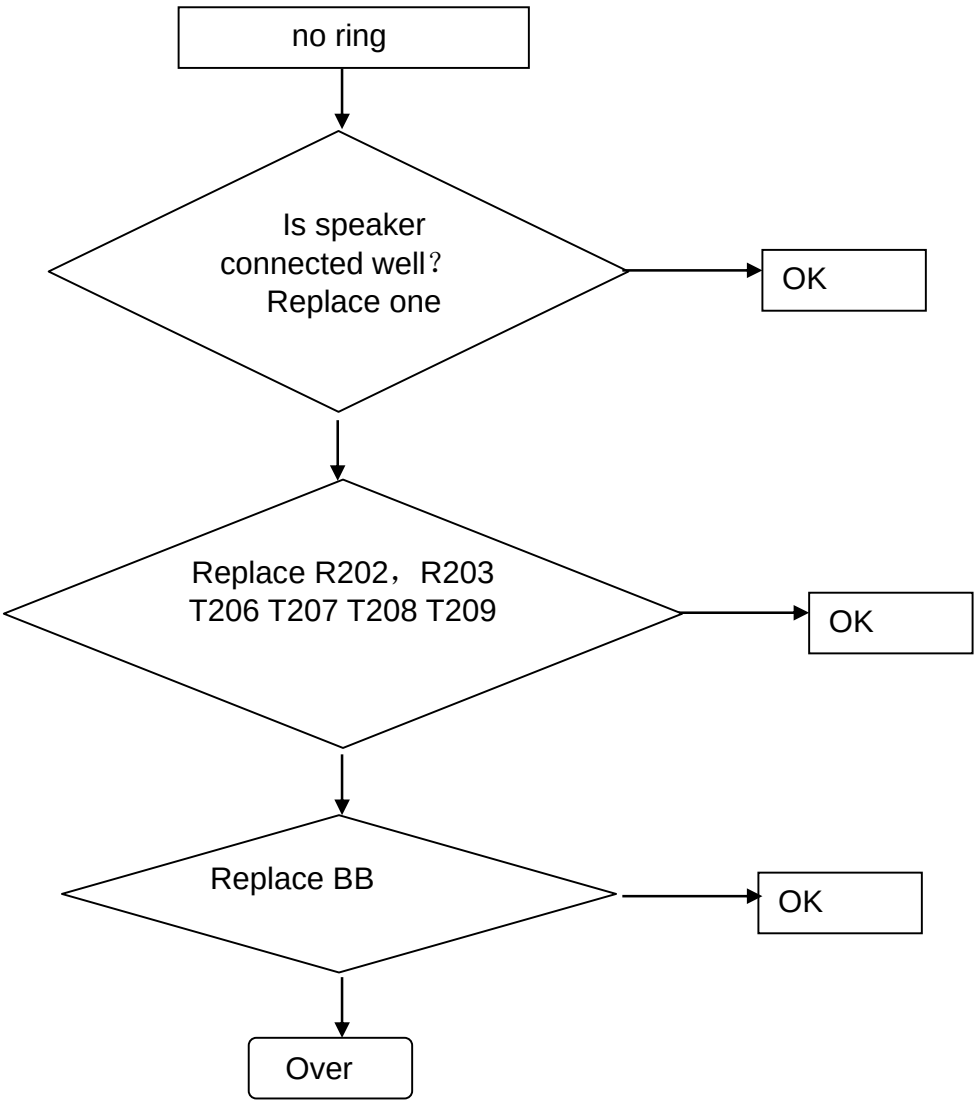
3.2.1 Vibrate failure

- Detail: vibrator doesn’t work
- Repair:



3.2.2 No ring

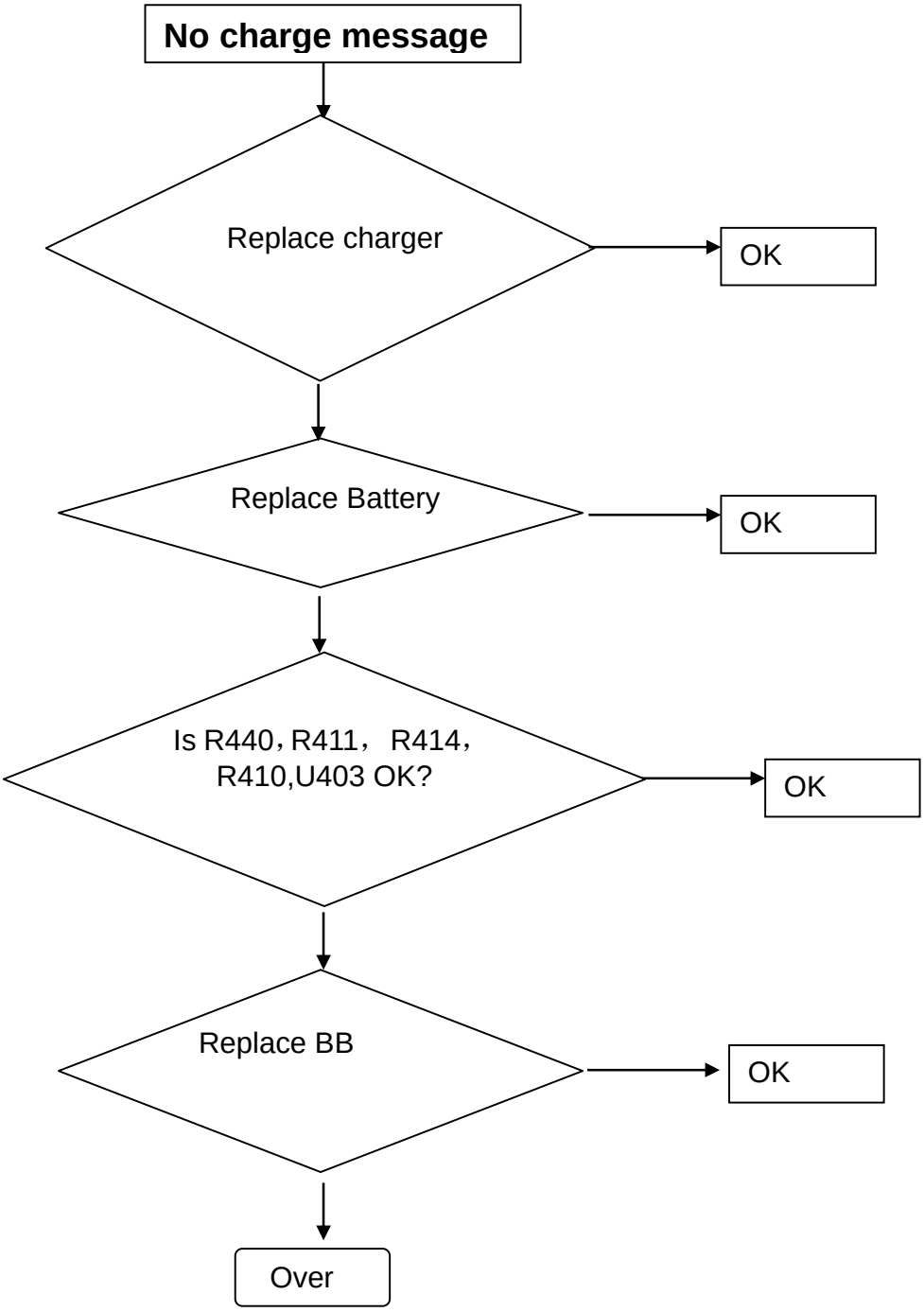
- Detail: no ring
- Analysis: speaker connects failure.
- Repair:



3.3 Charge circuit

3.3.1 No charge message

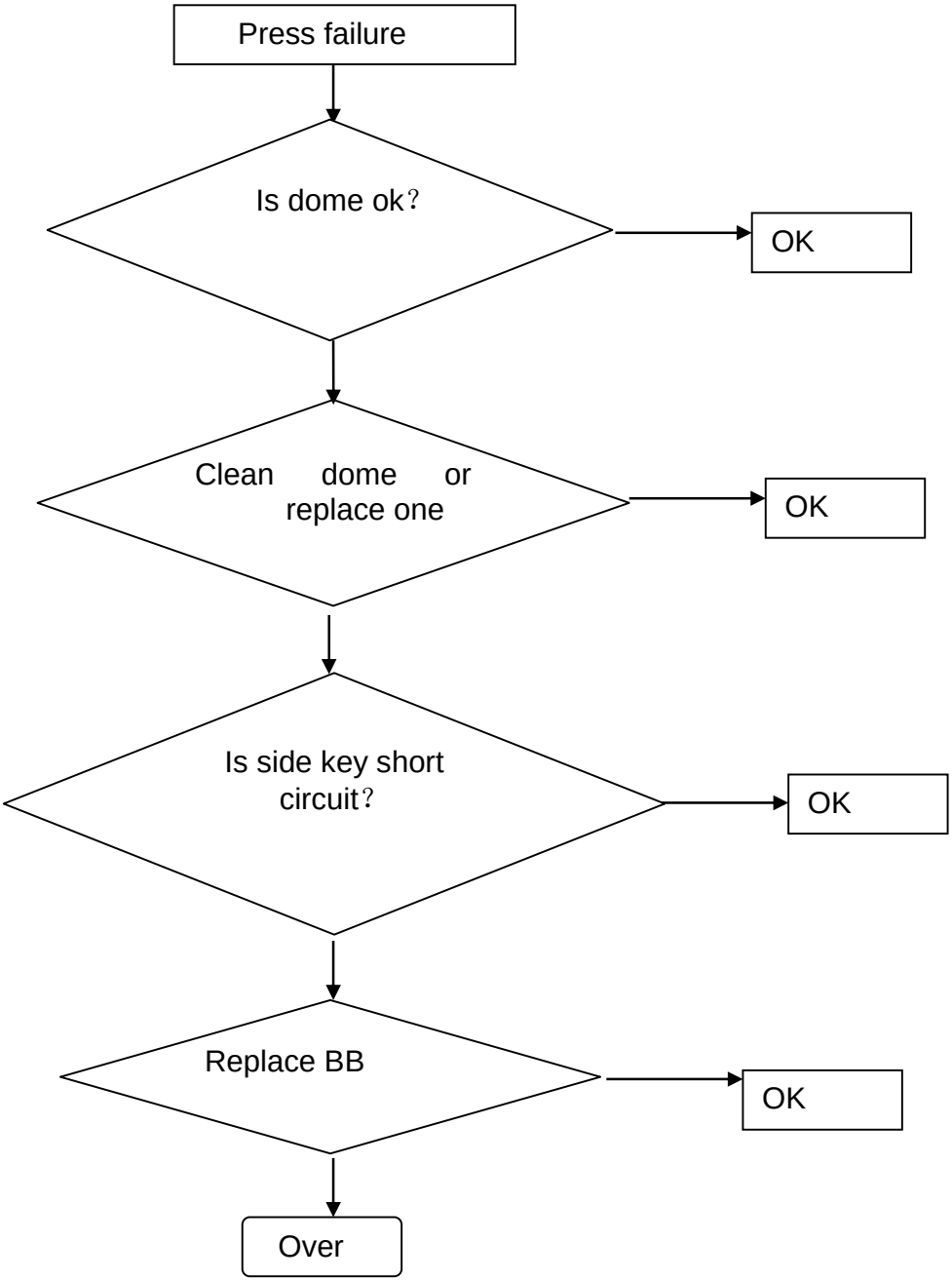
- Detail: no charge message after charger’s plugging
- Analysis: Is the charger OK? Is the battery OK? The charge circuit is abnormal.
- Repair:



3.4 Keypad and back light

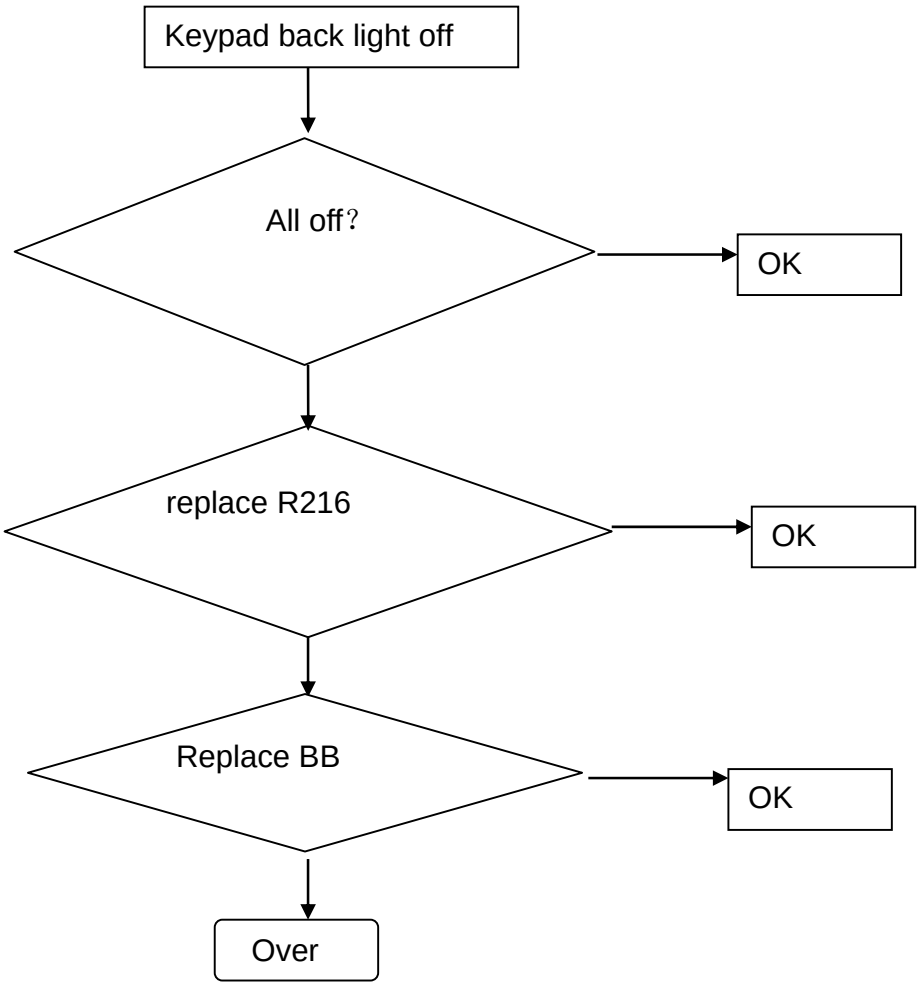
3.4.1 Press failure

- Detail: press failure
- Analysis: The dome is broken. The side key is short circuit
- Repair:



3.4.2 Keypad back light off

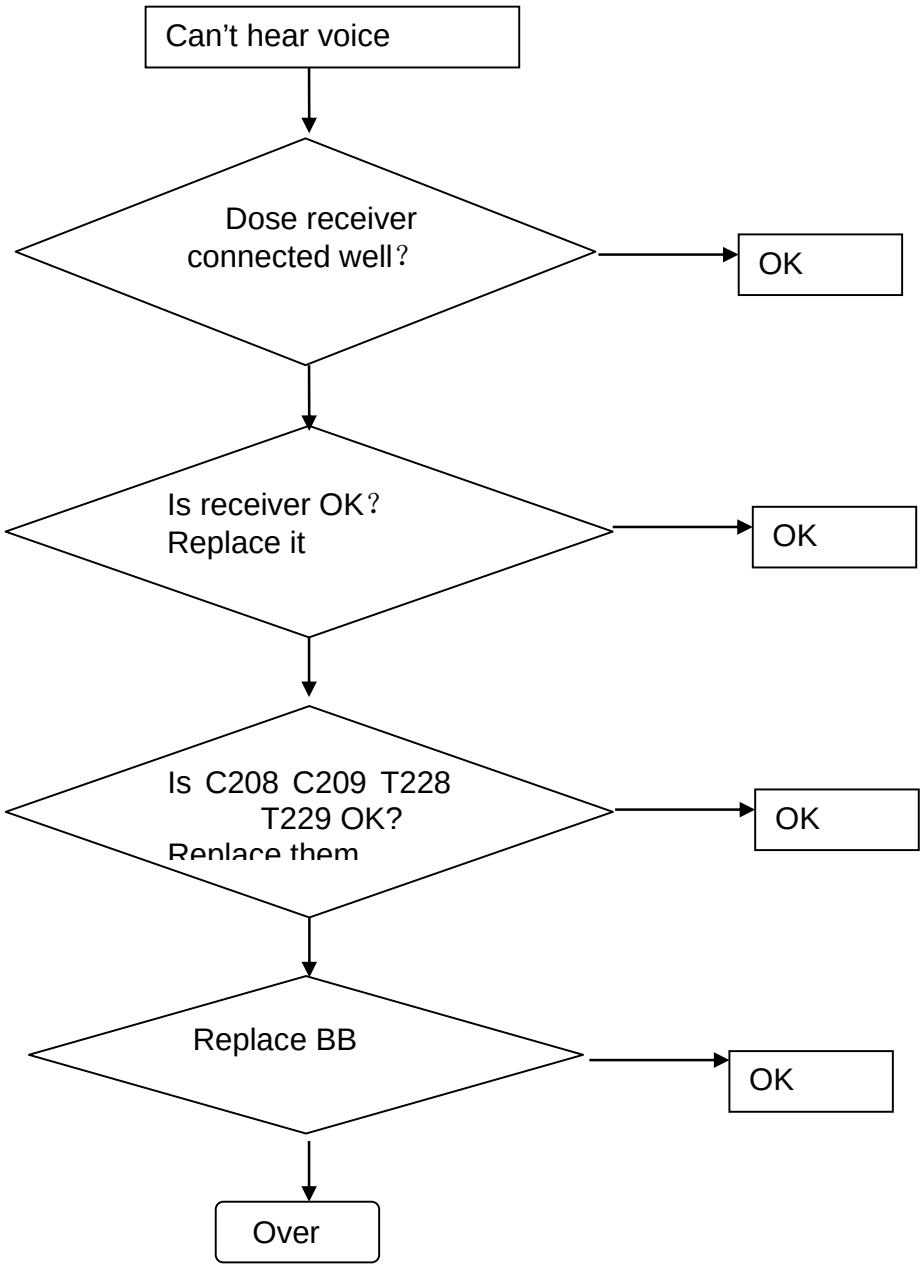
- Detail: The keypad back light is always off
- Analysis: LEDs are broken. The current control resistance is cold solder joint.
- Repair:



3.5 Calling

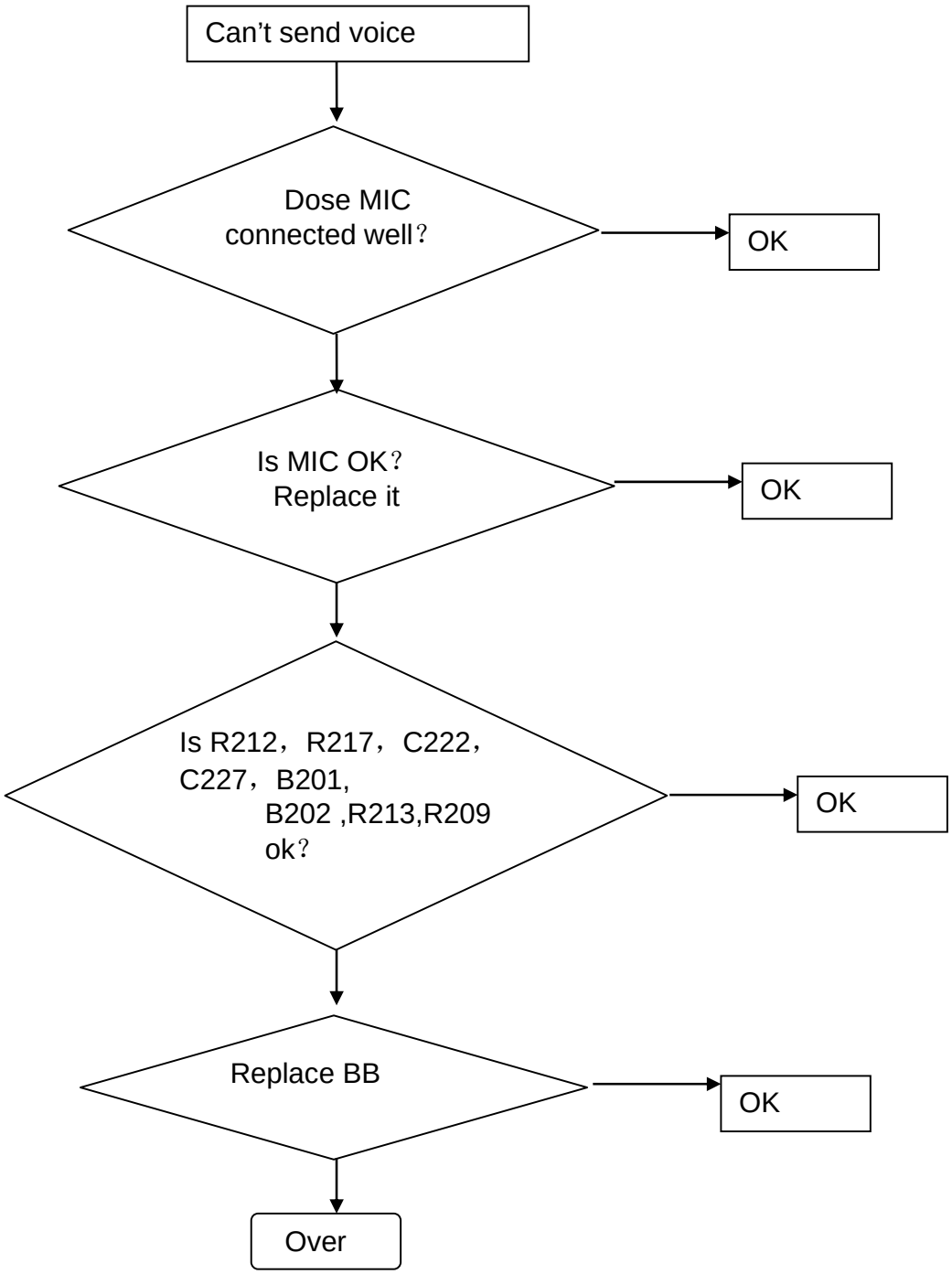
3.5.1 Can’t hear voice

- Detail: Can’ t hear voice when calling
- Analysis: The receiver connect badly or broken
- Repair:



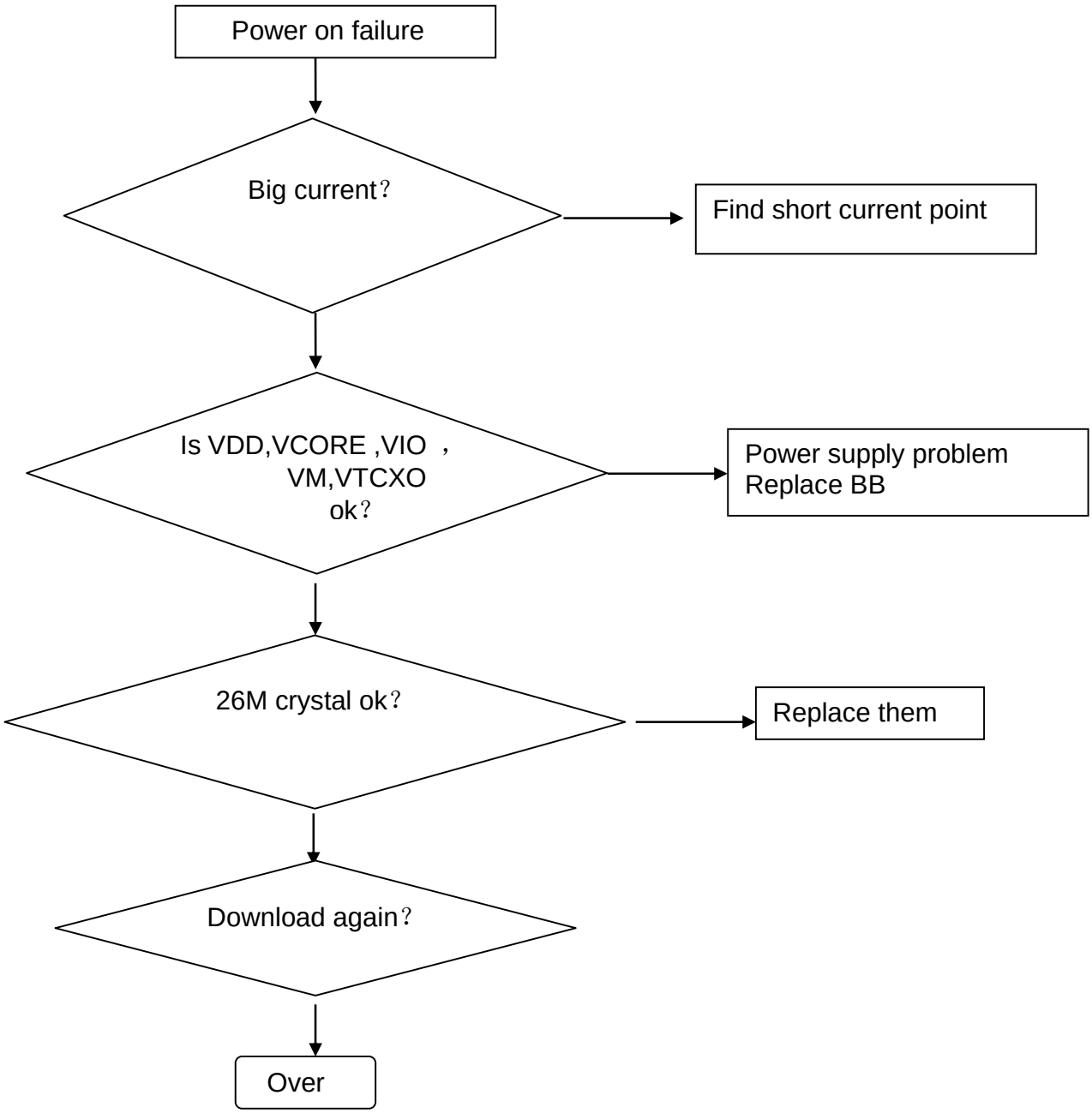
3.5.2 Can’t send voice

- Detail: The other side people can’t hear your voice
- Analysis: The MIC connect badly or broken. There are some problems in MIC circuit.
- Repair:



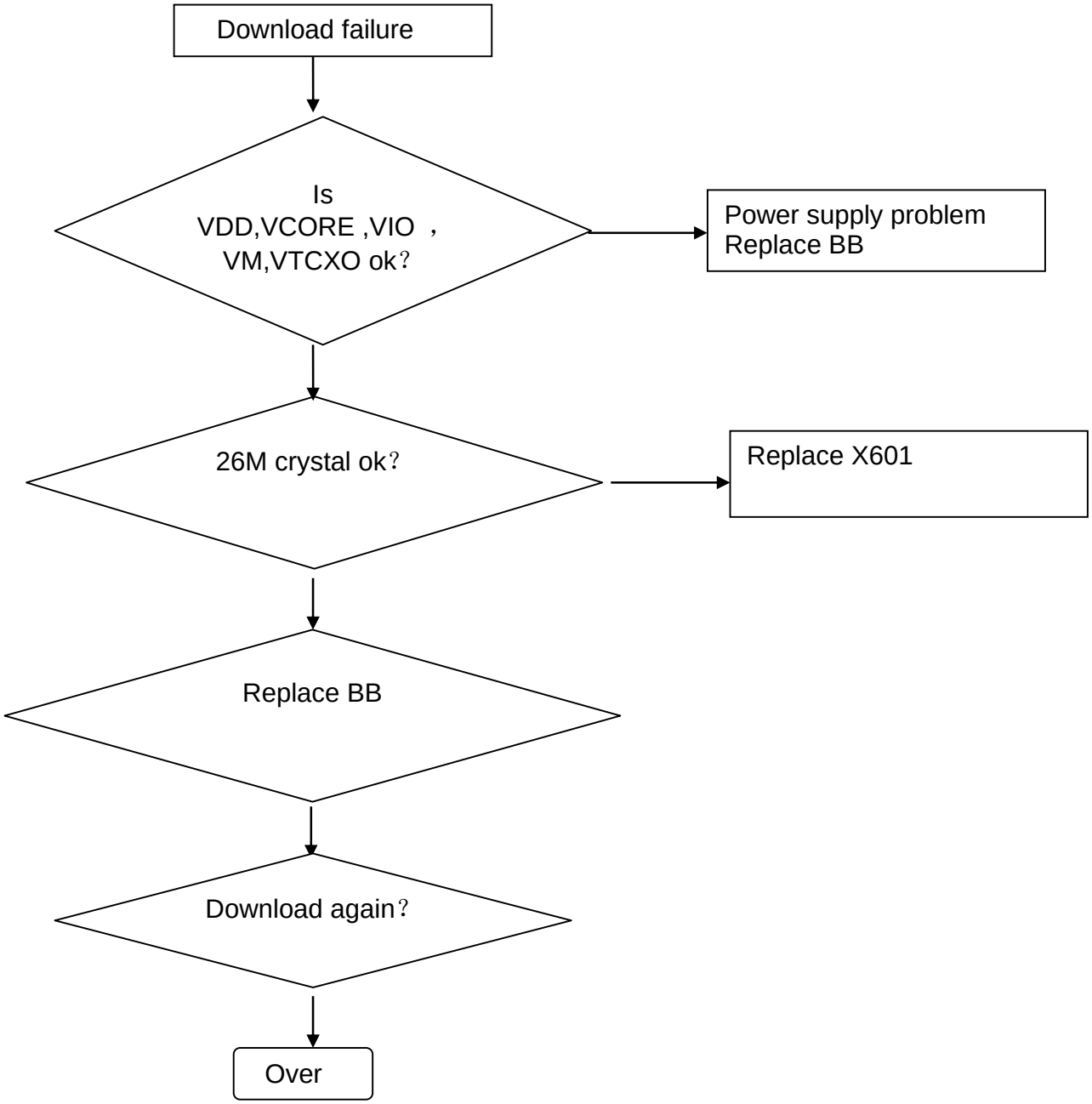
3.6 Power on failure

- Detail: Mobile can’t power on
- Analysis: The 26M crystal is broken. The power-on-off key dome is broken. The
- baseband or flash chip is broken.
- Repair:



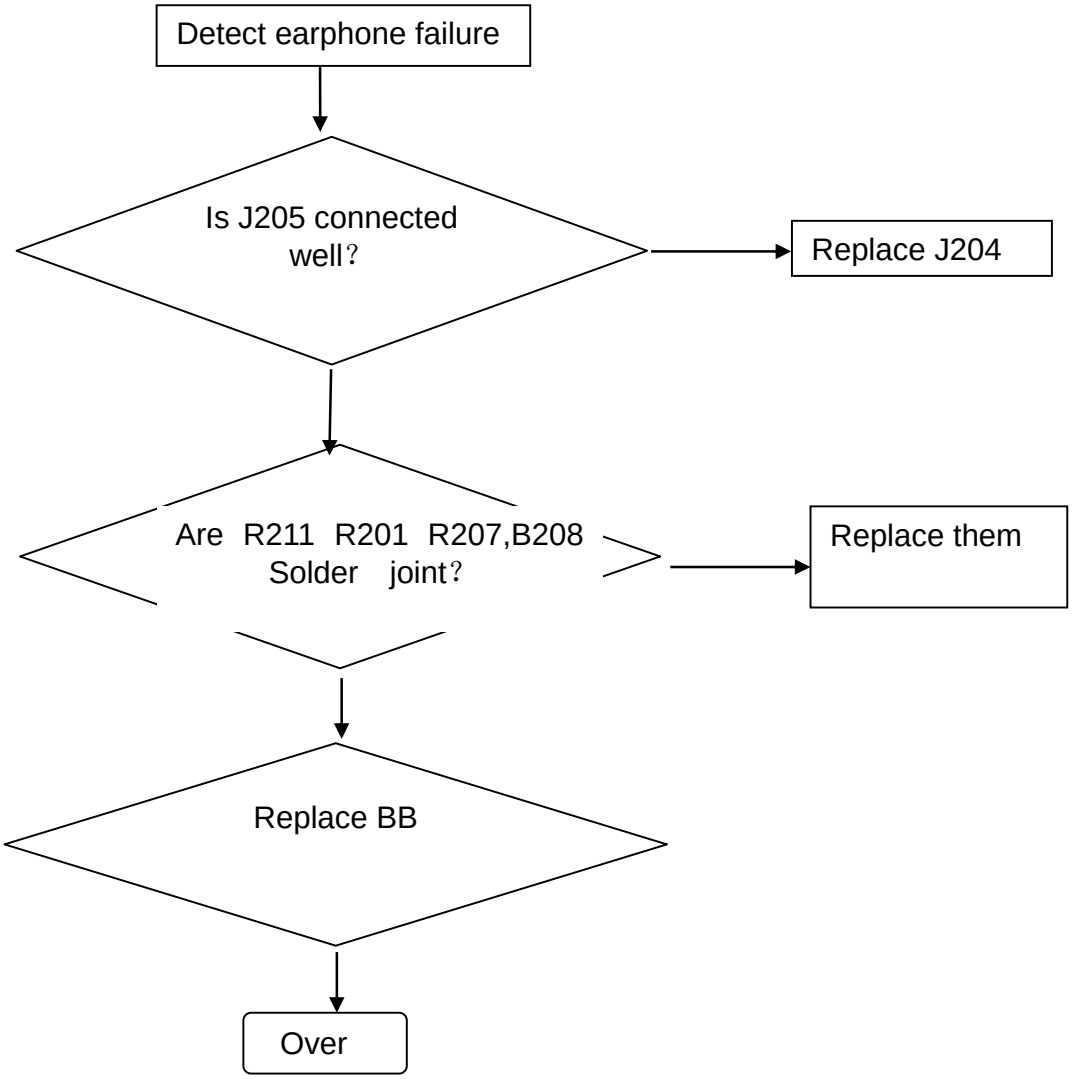
3.7 Download failure

- Detail: Can’t download code to mobile
- Analysis: The 26M crystal is broken. The power-on-off key dome is broken. The baseband or flash chip is broken.
- Repair:



3.8 Detect earphone failure

- Detail: The mobile can’t detect plugging in and out of earphone.
- Analysis: The baseband chip can’t receive interrupt signal.
- Repair:



3.9 ADC FAIL and ADC SLOPE FAIL

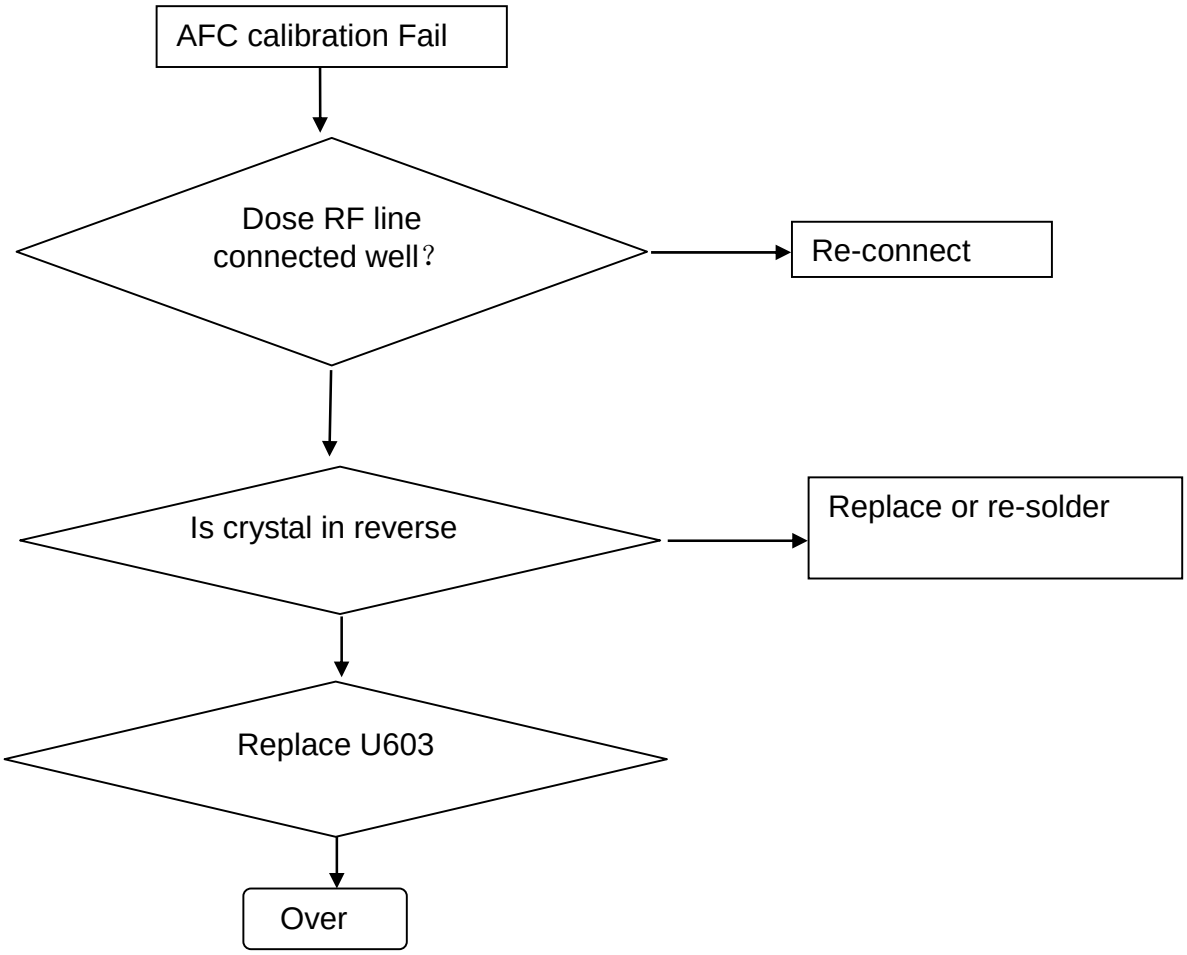
- Detail: ADC calibration fails.
- Analysis: The baseband chip is broken
- Repair: Re-solder or replace baseband chip

3.10 RF Troubleshooting

3.10.1 Calibration

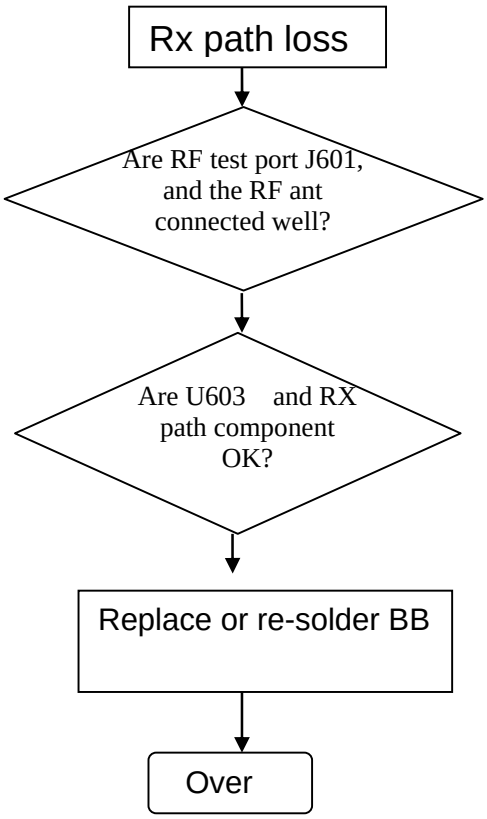
A. AFC calibration Fail

- Detail: AFC calibration Fail.
- Analysis: RF test line connects badly. The crystal and components beside are broken or cold solder joint.
- Repair:



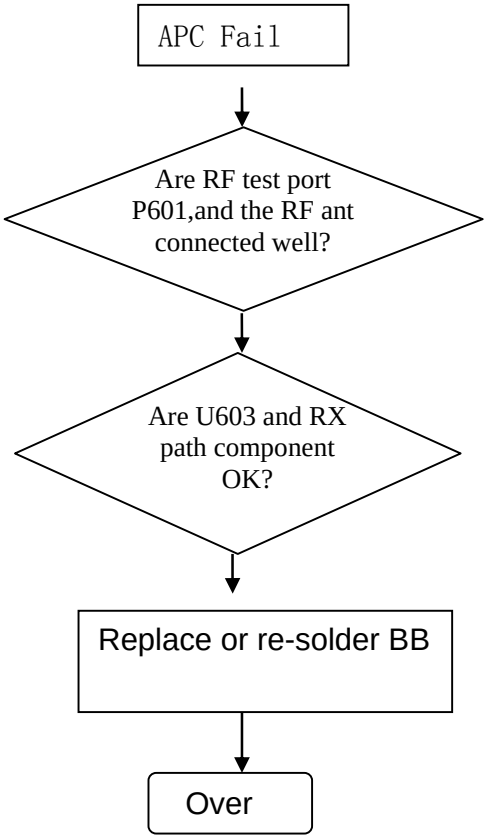
B. Rx path loss

- Detail: Rx path loss calibration Fail
- Analysis: RF test line connects badly. There are some problems in the components at RX channel.
- Repair:


Rx path loss
Are RF test port J601, and the RF ant connected well?
Are U603 and RX path component OK?
Replace or re-solder BB
Over

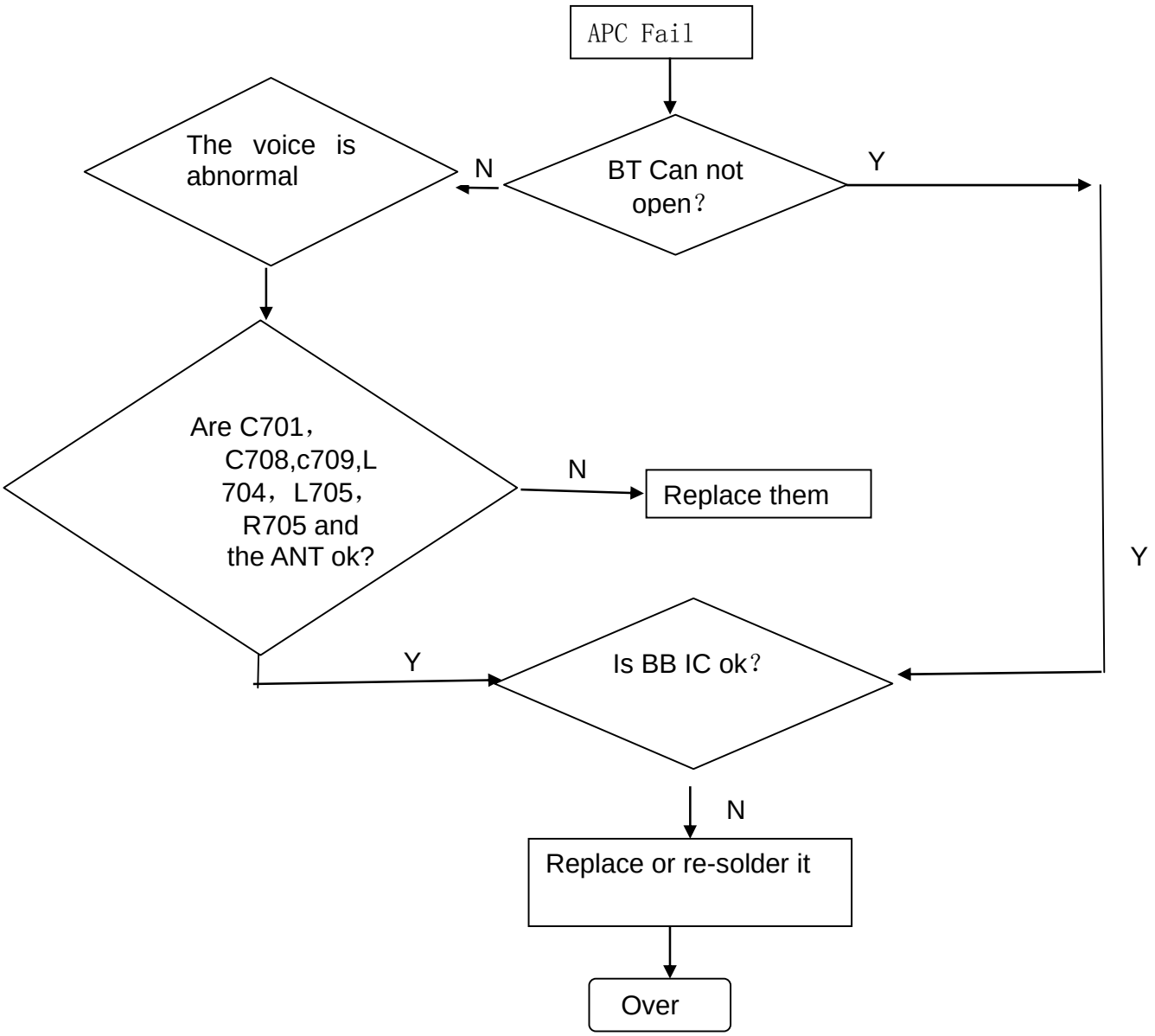
C. APC

- Detail: APC calibration Fail
- Analysis: RF test line connects badly. PA is in reverse. There are some problems in the components at PA and components beside.
- Repair:



3.11 Bluetooth Troubleshooting

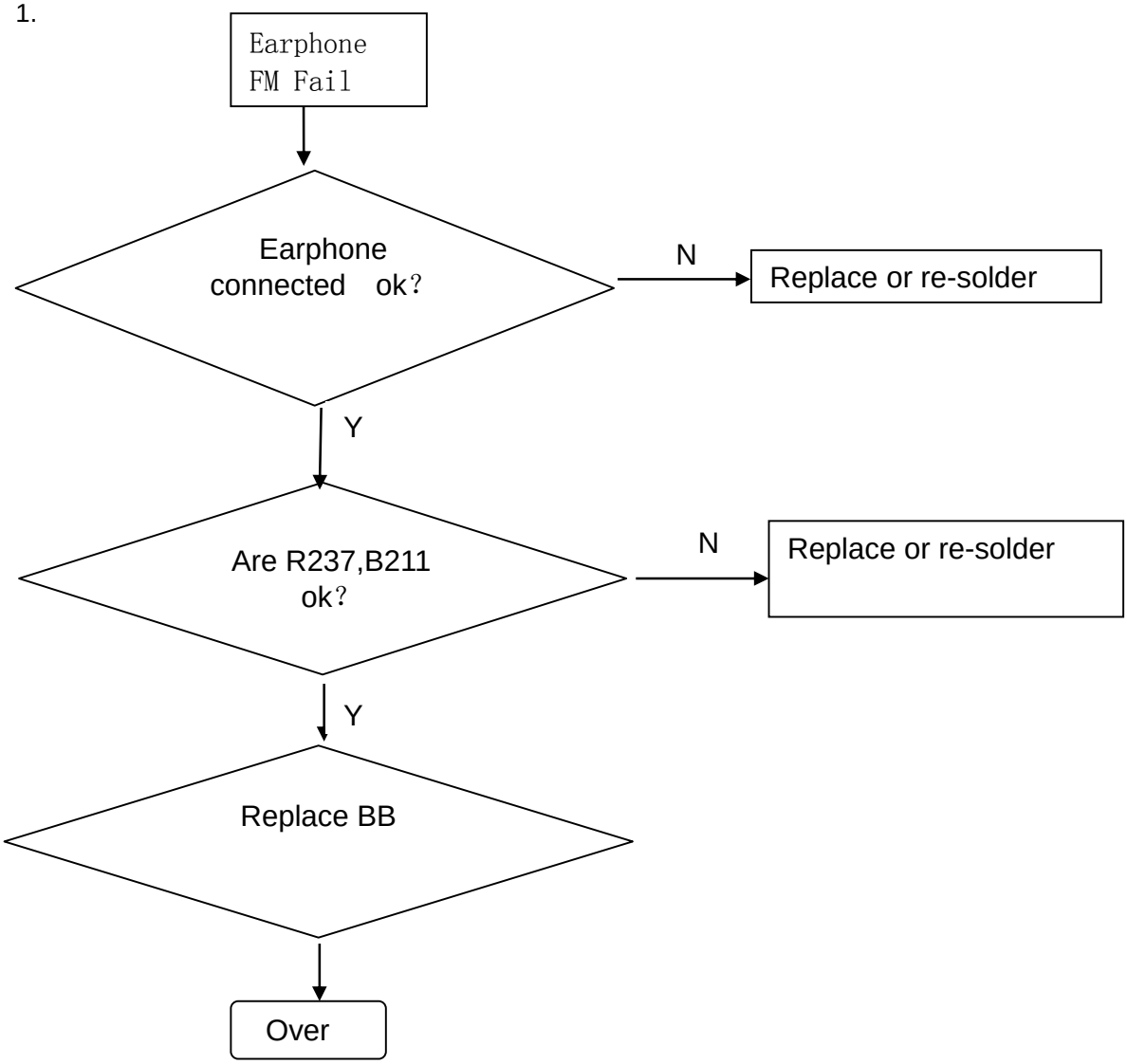
- Detail: Bluetooth Fail
- Analysis: Is Bluetooth ant connected ok? Is U101 ok?
- Repair:



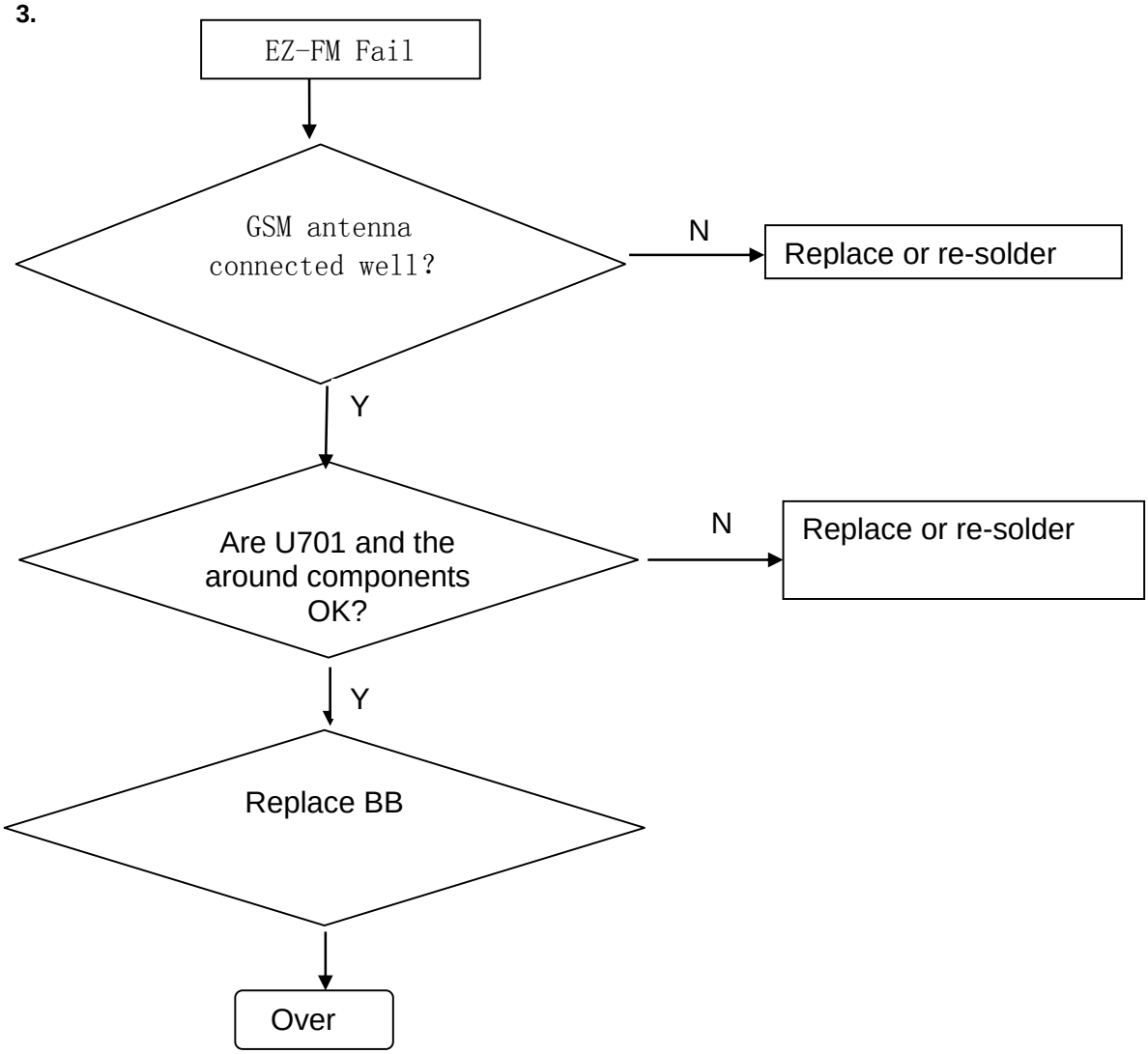
3.12 FM Troubleshooting

- Detail: FM Fail
- Analysis: Are BB1C and the ant OK?
- Repair:

1.



3.


EZ-FM Fail
GSM antenna connected well?
N
Replace or re-solder
Y
Are U701 and the around components OK?
N
Replace or re-solder
Y
Replace BB
Over